



PATENT APPLICATION
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LeA 31,454

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF)
KARL W. DIETRICH ET AL) GROUP NO.: 1711
SERIAL NUMBER: 09/077,914) EXAMINER: M. FOELAK
FILED: JUNE 4, 1998)
TITLE: PROCESS FOR PREPARING)
RIGID FOAMED MATERIALS)
CONTAINING URETHANE GROUPS)

REPLY BRIEF

Assistant Commissioner for Patents
Washington, D.C. 20231
Sir:

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The Examiner's Answer dated February 1, 2000 has been received and its contents noted. In response, Appellants wish to address three points raised by the Examiner in his response to the arguments made in Appellants' Brief.

1. C₃ and C₄ alkanes are not equivalent to isopentane in a polyurethane foam-forming system.

The Examiner has argued that Appellants have not rebutted the *prima facie* case of obviousness "established" by De Vos et al

... by way of factual evidence that isopentane does not achieve the unexpected results that the homologous claimed co-blowing agents achieve." (at page 5, lines 6-12) (emphasis added)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an enveloped addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 _____ April 3, 2000
Date

Lyndanne M. Whalen Reg. No. 29,457
Name of applicant, assignee or Registered Representative


Signature
April 3, 2000
Date

A key property of any blowing agent is its boiling point at the processing temperature and at the reaction temperature. Liquids are obviously easier to process than gaseous materials but gaseous materials are necessary for foaming. The "ideal" blowing agent will therefore be a liquid at the temperature at which the foam-forming reactants are fed to the reaction vessel and a gas at the foam-forming reaction temperature.

Isopentane has a boiling point of approximately 28°C. Isopentane would therefore be liquid at ambient temperature and a gas during the foam-forming reaction.

Butane has a boiling point of -0.5°C. Isobutane has a boiling point of approximately -12°C. Propane has a boiling point of approximately -42°C. These materials are clearly gaseous even at ambient temperature and could not therefore be readily substituted for isopentane in a foam-forming process.

One skilled in the art seeking a blowing agent for a polyurethane foam-forming system would not therefore consider a C₃ and/or a C₄ alkane to be equivalent to isopentane.

2. De Vos et al did not use a C₃ or a C₄ alkane in any of its Examples.

At page 5, lines 12-15 of the Examiner's Answer, it is argued:

Appellants' arguments with regard [to] the solubility problems of alkanes in polyols would discourage ones skilled in the art to use them does not appear to have discouraged patentees from their use in their working examples wherein acceptable results were obtained.

De Vos et al did **not** use a single C₃ or C₄ blowing agent in any of the 13 Examples described in that reference. The only blowing agents used in the reference Examples were cyclopentane and isopentane.

3. The teachings of De Vos et al do not "clearly" narrow the choice of a co-blowing agent to Appellants' required C₃ and/or C₄ alkane.

At page 5, lines 16-19 of the Examiner's Answer, it is argued that De Vos et al's teaching that alkane co-blowing agents are preferred

...clearly lowers the choice of the different classes of co-blowing agents to that of the claimed alkanes.

Alkanes are **not**, however, the only preferred class of compounds taught to be suitable by De Vos et al. In fact, alkanes are only one of the eight classes of materials which the reference teaches to be preferred.

Nor are alkanes the only class of co-blowing agents which De Vos et al teaches to be "especially preferred". The hydrofluorocarbons which are commonly used in commercial foam formulations are also taught to be "especially preferred".

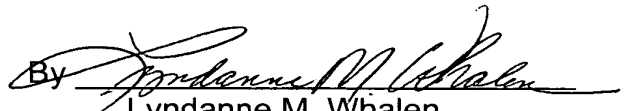
Further, 23 alkanes are specifically listed by De Vos et al as suitable co-blowing agents. Of these 23, only 6 are either a C₃ or a C₄ alkane.

Appellants therefore maintain that selection of the C₃ and/or C₄ alkane required in their claimed invention is **not** "clear" from the teachings of the De Vos et al reference.

For these reasons and those discussed in their Brief, Appellants continue to maintain that each of the Examiner's rejections is in error and respectfully request that each of these rejections be reversed and Claims 11-15 and 18-23 be allowed.

Respectfully submitted,

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